

We claim:

1. A flow-through electrochemical reactor comprising:
a body having an internal chamber, and an inlet port
5 and an outlet port in communication with said internal
chamber to permit flow of wastewater therethrough;
at least one porous anode arranged in said internal
chamber such that the wastewater flowing between said inlet
port and said outlet port flows through the pores of said at
10 least one porous anode, said at least one porous anode
having activity for the destruction of a target substance;
and
at least one cathode disposed in the internal chamber
to permit an electric current to be established between said
15 at least one cathode and said at least one anode, said
electric current reducing the concentration of said target
substance in the wastewater flowing through the chamber.
2. A flow-through electrochemical reactor according to
20 claim 1, wherein the porous anode comprises a foam.
3. A flow-through electrochemical reactor according to
claim 1, wherein the porous anode comprises a substrate
having an anodic coating.
- 25 4. A flow-through electrochemical reactor according to
claim 3, wherein the substrate is tantalum or titanium.
- 30 5. A flow-through electrochemical reactor according to
claim 3, wherein the anodic coating is selected from the
group consisting of platinum, tantalum-doped iridium dioxide
and antimony-doped tin dioxide.

6. A flow-through electrochemical reactor according to
claim 1, wherein the at least one cathode is a porous
cathode, and wherein the at least one porous cathode is
5 sized in the internal chamber so that the wastewater passes
through the pores of the porous cathode.

7. A flow-through electrochemical reactor according to
claim 6, wherein the porous cathode comprises a foam.

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8. A flow-through electrochemical reactor according to
claim 1, wherein the cathode comprises nickel.

9. A flow-through electrochemical reactor according to
15 claim 1, wherein the body is tubular and the internal
chamber is generally cylindrical, and wherein each anode and
cathode is supported by an insulating holder sized to be
slidably inserted into the internal chamber.

20 10. A flow-through electrochemical reactor according to
claim 1, wherein the reactor comprises from two to ten
anodes and from three to eleven cathodes, respectively, in
alternating arrangement.

25 11. A flow-through electrochemical reactor according to
claim 10, wherein the reactor comprises seven cathodes and
six anodes.

30 12. A flow-through electrochemical reactor according to
claim 1, wherein the target substance comprises an aryl
compound, and, in use, the reactor produces an electrical

current having a current density capable of oxidizing the aryl compound.

13. A flow-through electrochemical reactor according to
5 claim 12, wherein the aryl compound is selected from the group consisting of phenol, o-cresol, m-cresol and p-cresol.

14. A flow-through electrochemical reactor according to
claim 13, wherein the aryl compound is phenol.